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INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY
(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference P06434PC00	FOR FURTHER ACTION See Form PCT/IPEA/416	
International application No. PCT/SE2004/001515	International filing date (day/month/year) 19.10.2004	Priority date (day/month/year) 20.10.2003
International Patent Classification (IPC) or national classification and IPC B60H3/00, F28G9/00		
Applicant Nutsos, Mikael		

- This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.
- This REPORT consists of a total of 3 sheets, including this cover sheet.
- This report is also accompanied by ANNEXES, comprising:
 - ☒ (sent to the applicant and to the International Bureau) a total of 2 sheets, as follows:
 - ☒ sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).
 - ☐ sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.
 - ☐ (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) _____, containing a sequence listing and/or tables related thereto, in electronic form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).

- This report contains indications relating to the following items:

<input checked="" type="checkbox"/>	Box No. I	Basis of the report
<input type="checkbox"/>	Box No. II	Priority
<input type="checkbox"/>	Box No. III	Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
<input type="checkbox"/>	Box No. IV	Lack of unity of invention
<input checked="" type="checkbox"/>	Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
<input type="checkbox"/>	Box No. VI	Certain documents cited
<input type="checkbox"/>	Box No. VII	Certain defects in the international application
<input type="checkbox"/>	Box No. VIII	Certain observations on the international application

Date of submission of the demand 18.08.2005	Date of completion of this report 03.10.2005
Name and mailing address of the IPEA/SE Patent- och registreringsverket Box 5055 S-102 42 STOCKHOLM Facsimile No. +46 8 667 72 88	Authorized officer Göran Carlström/EK Telephone No. +46 8 782 25 00

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/SE2004/001515

Box No. I Basis of the report

1. With regard to the language, this report is based on:

- ☒ the international application in the language in which it was filed
- ☐ a translation of the international application into _____,
which is the language of a translation furnished for the purposes of:
- ☐ international search (Rules 12.3(a) and 23.1(b))
- ☐ publication of the international application (Rule 12.4(a))
- ☐ international preliminary examination (Rules 55.2(a) and/or 55.3(a))

2. With regard to the elements of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report)*:

- ☐ the international application as originally filed/furnished
- ☒ the description:
pages 1 - 13 as originally filed/furnished
pages* _____ received by this Authority on _____
pages* _____ received by this Authority on _____
- ☒ the claims:
pages _____ as originally filed/furnished
pages* _____ as amended (together with any statement) under Article 19
pages* 14 - 15 received by this Authority on 18.08.2005
pages* _____ received by this Authority on _____
- ☒ the drawings:
pages 1 - 8 as originally filed/furnished
pages* _____ received by this Authority on _____
pages* _____ received by this Authority on _____
- ☐ a sequence listing and/or any related table(s) – see Supplemental Box Relating to Sequence Listing.

3. ☐ The amendments have resulted in the cancellation of:

- ☐ the description, pages _____
- ☐ the claims, Nos. _____
- ☐ the drawings, sheets/figs _____
- ☐ the sequence listing (*specify*): _____
- ☐ any table(s) related to the sequence listing (*specify*): _____

4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

- ☐ the description, pages _____
- ☐ the claims, Nos. _____
- ☐ the drawings, sheets/figs _____
- ☐ the sequence listing (*specify*): _____
- ☐ any table(s) related to the sequence listing (*specify*): _____

* If item 4 applies, some or all of those sheets may be marked "superseded."

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/SE2004/001515

Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims	<u>1-11</u>	YES
	Claims		NO
Inventive step (IS)	Claims	<u>1-11</u>	YES
	Claims		NO
Industrial applicability (IA)	Claims	<u>1-11</u>	YES
	Claims		NO

2. Citations and explanations (Rule 70.7)

Documents cited in the International Search Report:

D1: EP 1095805 A1

D2: WO 9417356 A1

D3: DE 4017052 A1

D4: EP 0364381 A1

The cited documents represent the general state of the art.

The invention defined in claims 1- 11 is not disclosed by any of these documents.

The cited prior art does not give any indication that would lead a person skilled in the art to the claimed air conditioner cleaning apparatus and method. Therefore, the claimed invention is not obvious to a person skilled in the art.

Accordingly, the invention defined in claims 1- 11 is novel and is considered to involve an inventive step. The invention is industrially applicable.

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CLAIMS (16.08.2005):

1. A cleaning system for cleaning cooling and/or heating units of air conditioners in vehicles, wherein the cleaning system comprises a cleaning assembly (220) which comprises at least one distribution tube (225) provided with at least one nozzle for (230), and is arranged to distribute cleaning substance onto the surfaces of the cooling and/or heating units via the distribution tube (225) and nozzle(230),
5 **characterised in** that the cleaning system is mounted in the vehicle and in that the cleaning assembly is connected to means for heating (325) the cleaning substance, wherein the heating means (325) utilizes heat generated from the engine of the vehicle to heat the cleaning substance.
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2. The cleaning system according to claim 1, **wherein** the means for heating (325) the cleaning substance comprises a heat exchanger which is arranged to be connected to the cooling system of the vehicle engine whereby the coolant of the cooling system may heat the cleaning substance.
- 15 3. The cleaning system according to claim 1 or 2, **wherein** the cleaning assembly and/or the heating means are connected to means for increasing the pressure (340) of the cleaning substance.
4. The cleaning system according to claim 1 or 2, **wherein** the cleaning assembly and/or the heating means is connected to a steam generating apparatus.
- 20 5. The cleaning system according to claim 2, **further comprising** a second means for heating (355) arranged to heat the cleaning substance if the heat exchanger does not suffice to heat the cleaning substance to a predetermined temperature.
6. The cleaning system according to any of claims 1 to 5, **further comprising** a storage tank (305) for storing the cleaning substance, and a drainage (342) positioned in a
25 housing of the air conditioning unit and arranged to, from the cooling and/or heating unit, collect used cleaning substance, wherein the drainage is connected to the storage tank (305) so that used cleaning substance can be stored in the storage tank (305) and reused or regenerated.
7. A method of cleaning cooling and/or heating units of air conditioners in vehicles,
30 wherein the cleaning system comprises a cleaning assembly (220) arranged to distribute cleaning substance to the surfaces of the cooling and/or heating units,

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which method comprises the steps of:

-*determining* (a) that the heating/cooling system needs to be clean;

-*heating* (e) the cleaning substance by utilizing heat generated by the engine of the vehicle;

5 -*flowing* (h) a cleaning substance through a feeding tubes to at least one distribution tube and further via at least one nozzle to be distributed onto the heating unit and/or cooling unit.

10 8. The method according to claim 7, **wherein** the step of heating (e) comprises that the cleaning substance flows through a heat exchanger wherein said heat exchanger is connected to the cooling system of the engine and whereby transport heat from the coolant of the engines cooling system to the cleaning substance.

9. The method according to claim 7 or 8, **further comprising** a step of *sealing* (f) the part or parts of the air conditioning unit that should be cleaned;

15 10. The method according to any of claims 7 to 9, **further comprising** the step of *directing* (i) the used cleaning substance to a storage tank for regeneration.

11. The method according to claim 7, wherein the method comprises the further step of *venting* (l) the heating/cooling unit after the cleaning process by providing a flow of air from the heating/cooling unit to the outside of the vehicle.